



BOARD OF EQUALIZATION  
**REVENUE ESTIMATE**  
ELECTRONIC COMMERCE AND MAIL ORDER SALES

---

## Summary

Updated Estimates. Based on information released by the U.S. Census Bureau and other sources in 2006, we have updated our estimates of remote sales (electronic and traditional mail order sales) revenue losses from out-of-state vendors. We now estimate annual revenue losses of \$1.091 billion in calendar year 2005. Of the total, \$409 million are owed by consumers and \$682 million were unpaid by businesses. These revenues are spread among approximately 11.5 million households and more than two million businesses. Sales and use tax liabilities average \$340 per year for each unregistered California business, and \$36 per year for each California household. Revenue from these out-of-state electronic commerce and mail order purchases are a significant component of the sales and use tax gap. (As defined here, the tax gap is the difference between what taxpayers owe and what they voluntarily pay.) This paper documents our 2005 estimates of sales and use tax revenues associated with electronic commerce and mail order sales that are not voluntarily paid.

Comparisons to Previous Estimates. Our previous estimates of remote sales revenue losses were made for calendar year 2004. U.S. Census Bureau data released in spring of 2006 show that U.S. sales made by companies in the electronic shopping and mail order houses industry rose about 10 percent in 2005.<sup>1</sup> (These sales include both electronic retail sales and traditional mail order retail sales, both of which are primarily made to households.) A separate Census Bureau report shows that the electronic retail sales component of these U.S. sales increased by about 25 percent in 2005.<sup>2</sup> The Census Bureau also upwardly revised 2003 U.S. electronic merchant wholesale sales (sales made from one business to another) by about 4 percent and reported that these sales rose an additional 9 percent in 2004.<sup>3</sup>

With the gains in sales, our 2005 estimates of remote sales revenue losses are about \$81 million higher than the 2004 estimates we released in early January 2006 (\$1.091 billion in 2005 compared to \$1.010 billion in 2004). Nearly all of the \$81 million increase in revenue losses were for business-to-business (B-to-B) sales. Estimates of 2005 revenue losses of business-to-

---

<sup>1</sup> *Annual Benchmark Report for Retail Trade and Food Services: January 1992 Through February 2006*, U.S. Census Bureau, March 2006, website: [http://www.census.gov/prod/www/abs/br\\_month.html](http://www.census.gov/prod/www/abs/br_month.html).

<sup>2</sup> *Quarterly Retail E-Commerce Sales*, U.S. Census Bureau, May 18, 2006, website: <http://www.census.gov/mrts/www/current.htm>.

<sup>3</sup> *E-Stats: Measuring the Electronic Economy, "2004 E-Commerce Multi-sector Report,"* May 25, 2006, website: <http://www.census.gov/eos/www/ebusiness614.htm>. The latest data reported in this publication are for 2004.

consumer (B-to-C) sales were almost unchanged from those made for 2004 (a \$1 million increase). The reason B-to-C revenue losses were largely unchanged is that increases in sales were offset by increases in our estimate of the percentage of sales made by companies registered as California taxpayers, based on updated information the Census Bureau made available in their final releases of their 2002 Economic Censuses of Wholesale and Retail Trade. Our estimate of this percentage increased from 60 percent of sales in the 2004 revenue losses to 64 percent of sales in the 2005 revenue losses.<sup>4</sup> We also confirmed the reasonableness of the 64 percent figure with data from an independent source, 2005 electronic sales data for the top 500 firms estimated by an industry publication.<sup>5</sup>

## **Background, Methodology, and Assumptions**

### (1) Background Sources and Data Assumptions

The methodology used to derive these estimates is identical to that which we used in our previous revenue estimates. Since we released our previous estimates in early 2006 we obtained additional data and performed additional analyses which support important assumptions we made in making our electronic commerce and mail order sales revenue estimates.<sup>6</sup>

There are two major markets for electronic commerce: B-to-C and B-to-B. Each market has its own separate data sources and critical assumptions. We will assume all mail order sales are B-to-C.

### (2) Business-to-Consumer (B-to-C)

(A) Remote B-to-C Sales. We calculated U.S. remote sales relevant to making our revenue estimate to have been \$168.8 billion in 2005. We estimate that \$72.1 billion of the \$168.8 billion of remote sales are electronic. The remaining \$96.7 billion of remote sales are assumed to be traditional mail order sales.

(B) California Shares of U.S. Remote Sales. If we assume California's B-to-C electronic commerce purchases are proportional to the state's 12 percent share of U.S. population, this implies an estimate of California electronic commerce purchases of about \$8.65 billion (\$72.1 billion x 0.12 = \$8.65 billion). Unlike electronic commerce, we assume California has 10 percent of U.S. mail order sales. This assumption is less than our 12 percent population share because Census data suggest that Californians do proportionately less mail order shopping than do U.S.

---

<sup>4</sup> For details, see the Board of Equalization's February 2006 *Economic Perspective*, <http://www.boe.ca.gov/news/pdf/ep-2-06.pdf>.

<sup>5</sup> *The Internet Retailer Top 500 Guide: Profiles and Statistics of America's 500 Largest Retail Web Sites Ranked by Annual Sales*, published in 2006 by Vertical Web Media LLC, Chicago, Illinois.

<sup>6</sup> "Electronic Commerce and Mail Order Sales," revenue estimate, January 3, 2006. Details of our methodology and our more recent analyses will be provided upon request in "2005 Electronic Commerce and Mail Order Sales Revenue Estimates - Technical Documentation."

consumers.<sup>7</sup> Consequently, our estimate of taxable mail order sales to California households was about \$9.67 billion in 2005 (\$96.7 billion x 0.10 = \$9.67 billion).

(C) Taxable Portion of Remote B-to-C Sales. Data from the 2002 *Economic Census* for remote sales for NAICS Industry 4541 include detailed product categories and sales volumes of each.<sup>8</sup> Based on this list of products, we estimate that about 22 percent of U.S. remote sales were exempt in 2002 under the California sales and use tax law. These percentages apply to all remote sales; there are no separate product data for electronic and mail order sales. We will assume that these national product category percentages of remote sales also apply to California. This premise implies that 78 percent of remote sales are taxable to California purchasers.

Therefore, taxable California retail nonauto electronic commerce B-to-C sales are estimated to be \$6.75 billion (\$8.65 billion x 0.78 = \$6.75 billion). Taxable California mail order B-to-C sales are estimated to be \$7.54 billion (\$9.67 billion x 0.78 = \$7.54). In summary, taxable remote sales to California households are estimated to have been \$14.29 billion in 2005. Of these taxable remote sales, \$6.75 billion were electronic and \$7.54 billion were nonelectronic (traditional mail order sales).

(D) Compliance and Nexus Percentage Assumptions. For revenue estimation purposes, we assume that nearly all retailers with California nexus are remitting the sales and use taxes they owe. For the purpose of making this revenue estimate we assume that negligible use tax payments are made by households on their income tax forms or by filing a return with the Board.

Based on research done in 2004 and updated with more recent information from the 2002 *Economic Census of Retail Trade*, we estimate that about 64 percent of remote sales to California households were made from retailers that have nexus in California. This estimate is based on company reports and employment and sales by employment size category.<sup>9</sup> We also confirmed this estimate with data from the *Internet Retailer Top 500 Guide*.

---

<sup>7</sup> According to the 2002 *Census of Retail Trade*, California had an 11.0 percent share of U.S. sales from Electronic Shopping and Mail Order Houses, which includes both traditional mail order and electronic retail sales.

<sup>8</sup> "Table 3, Product Lines by Kinds of Businesses for the United States: 2002," in *Electronic Shopping and Mail-Order Houses: 2002*, U.S. Census Bureau, 2002 Economic Census, Retail Trade Industry Series, November 2004.

<sup>9</sup> Memo from Joe Fitz, Chief Economist, to Board Member Leonard, "Electronic Commerce," August 30, 2005.

(3) Business-to-Business (B-to-B)

(A) Data Sources and Definitions. For a variety of reasons the data available for estimating B-to-B revenues are less certain than that for B-to-C revenues.<sup>10</sup> We based our B-to-B revenue estimate on data from the Merchant Wholesale Trade Sales Survey published by the U.S. Census Bureau.<sup>11</sup> Unlike the B-to-C data, we are not aware of any Census Bureau estimates that include traditional mail order sales to businesses. We assume that B-to-B electronic commerce sales include traditional mail order sales from one business to another business.

The most recent *E-Stats* Census Bureau data show that U.S. electronic commerce merchant wholesales sales were \$825 billion in 2004, increasing 9.1 percent over those of 2003. With continuing economic growth in 2005, we assume U.S. B-to-B electronic commerce sales increased an additional 9.1 percent. Therefore, our estimate of 2005 U.S. B-to-B electronic commerce sales is \$900 billion. We reduced this figure by \$3.6 billion to adjust for exempt sales of custom software and electronically delivered software, resulting in 2005 California-taxable U.S. B-to-B electronic commerce sales of about \$896 billion.

(B) California Shares of U.S. Remote Sales. If we assume California's B-to-B electronic commerce purchases are proportional to the state's 12 percent share of U.S. population, this implies an estimate of California electronic commerce purchases of about \$107.52 billion (\$896 billion x 0.12 = \$107.52 billion).

(C) Exempt Sales. Sales data tabulated by the Census Bureau include all sales, both final sales and sales of intermediate goods used as inputs in the production process. We assume that 60 percent of sales are exempt, either because the exemption is related to the kinds of final goods sold or because the sales are not of final goods, but are instead sales for resale or intermediate goods used in production. If 60 percent of sales are exempt, this implies that the remaining 40 percent of sales are taxable under California law. Taking 40 percent of \$107.52 billion implies taxable California electronic commerce B-to-B sales of \$43.01 billion (\$107.52 billion x 0.40 = \$43.01 billion).

(D) Compliance by Businesses. After talking to Sales and Use Tax Department staff, we assumed that sales and use taxes are paid on 80 percent of the California taxable B-to-B electronic commerce sales (registered and unregistered taxpayers). A report on electronic commerce sales tax revenue impacts by the U.S. General Accountability Office (GAO) assumed a range of 50 to 95 percent compliance rates for taxable B-to-B purchases excluding cars.<sup>12</sup>

---

<sup>10</sup> U.S. Census Bureau e-commerce data are collected in several separate surveys. These surveys use different measures of economic activity (shipments, sales and revenues). The Census Bureau notes that these measures "should be interpreted with caution." There is potential for double counting of sales if the data are interpreted incorrectly. Furthermore, from a taxation perspective we do not know with certainty how much of the total B-to-B sales and use tax obligation has already been paid by businesses. For a more detailed discussion of these issues, see the Technical Documentation. The B-to-B estimates are subject to change to the extent that additional research may result in more accurate information.

<sup>11</sup> See footnote number 3 for the reference.

<sup>12</sup> *Sales Taxes: Electronic Commerce Growth Presents Challenges; Revenue Losses Are Uncertain*, U.S. General Accounting Office, June, 2000. Car sales are often excluded in such analyses because with

Our 80 percent assumption for all purchases would be in the middle portion of the GAO range.<sup>13</sup> A study by the Washington Department of Revenue released in early 2005 found a use tax compliance rate of 80 percent.<sup>14</sup> Eighty percent compliance implies that the remaining 20 percent of taxes due are not paid.

#### (4) Revenue Estimation Methodology

Business-to-Consumer (B-to-C) Electronic Commerce Sales. Applying the data and assumptions discussed earlier:

- California taxable electronic commerce B-to-C sales of \$6.75 billion (\$6,750 million),
- nexus of 64 percent of sales (36 percent noncompliance), and
- a 7.94 percent statewide average sales and use tax rate,

yields a revenue estimate of \$193 million [ $\$6,750 \times (1.0 - 0.64) \times 0.0794 = \$193$  million].

The state, local and transit district shares of the \$193 million are as follows:

Estimated California B-to-C Electronic Commerce Revenue Impacts in 2005	
	<u>Millions of Dollars</u>
State loss (5.25%)	\$127
Local loss (2.00%)	\$49
Transit loss (0.69%)	\$17
Total	\$193

Business-to-Consumer (B-to-C) Mail Order Sales. Applying the data and assumptions discussed earlier:

- California taxable mail order B-to-C sales of \$7.54 billion (\$7,540 million),
- nexus of 64 percent of sales (36 percent noncompliance), and
- a 7.94 percent statewide average sales and use tax rate,

yields a revenue estimate of \$216 million [ $\$7,540 \text{ million} \times (1.0 - 0.64) \times 0.0794 = \$216$  million].

The state, local and transit district shares of the \$216 million are as follows:

---

vehicle registration requirements, tax compliance rates for car purchases are assumed to be close to 100 percent.

<sup>13</sup> Excluding car sales would reduce the 80 percent compliance assumption, but it would likely still be in the middle of the GAO range.

<sup>14</sup> "Department of Revenue Compliance Study," Washington Department of Revenue Research Report 2004-4, December 20, 2004, website:  
[http://dor.wa.gov/Docs/Reports/Compliance\\_Study/compliance\\_study\\_2005.pdf](http://dor.wa.gov/Docs/Reports/Compliance_Study/compliance_study_2005.pdf)

Estimated California B-to-C Mail Order Revenue Impacts in 2005	
	Millions of Dollars
State loss (5.25%)	\$143
Local loss (2.00%)	\$54
Transit loss (0.69%)	\$19
<b>Total</b>	<b>\$216</b>

*Business-to-Business (B-to-B) Electronic Commerce Sales.* Applying the data and assumptions discussed earlier:

- California taxable B-to-B sales of \$43.01 billion (\$43,010 million),
- compliance of 80 percent (20 percent noncompliance) and
- a 7.94 percent statewide average sales and use tax rate,

yields a revenue estimate of \$682 million [ $\$43,010 \times (1.0 - 0.80) \times 0.0794 = \$682$  million].

The state, local and transit district shares of the \$682 million are as follows:

Estimated California B-to-B Electronic Commerce Revenue Impacts in 2005	
	Millions of Dollars
State loss (5.25%)	\$451
Local loss (2.00%)	\$172
Transit loss (0.69%)	\$59
<b>Total</b>	<b>\$682</b>

## Revenue Summary

California electronic commerce and mail order sales and use tax revenue impacts in 2005 are estimated to total \$1.091 billion. Of this total, B-to-C revenue impacts are \$409 million, and B-to-B revenue impacts are \$682 million. The state, local and transit district shares are as follows:

Estimated Total California Electronic Commerce and Mail Order Revenue Impacts in 2005			
	Millions of Dollars		
	B-to-C	B-to-B	Total
State loss (5.25%)	\$270	\$451	\$721
Local loss (2.00%)	\$103	\$172	\$275
Transit loss (0.69%)	\$36	\$59	\$95
<b>Total</b>	<b>\$409</b>	<b>\$682</b>	<b>\$1,091</b>

The table on the page 8 summarizes these revenue estimates in terms of mathematical formulas.

## Qualifying Remarks

The most cost efficient method of collecting sales and use tax is to have the seller collect the tax and remit it to the Board. The state's sales and use tax law is designed to collect the revenue in

this manner. The electronic commerce transactions that this estimate is concerned with take place between an out-of-state seller and an in-state purchaser neither of whom is registered with the Board. The seller is not registered with the Board because he or she is not "engaged in business" in California. Federal law precludes states from requiring businesses not engaged in business in their states to collect the use tax from the purchaser. Without the ability to require the seller to collect the use tax and remit it to the Board, collecting these use tax liabilities from the purchaser can become very difficult and expensive.

In these electronic commerce transactions, since the seller is not registered with the Board, the purchaser has a use tax liability. Our estimate identifies electronic commerce transactions as either business-to-business or business-to-consumer. For the most part neither the purchasing business nor the consumer may be aware of their use tax liability.

According to the 2002 Economic Census of California there are 2,920,443 businesses in California. Of these, only 893,673 businesses are registered with the Board for sales and use tax purposes. That leaves 2,026,770 unregistered businesses. The total unpaid use tax from electronic commerce sales made to these businesses is estimated to be \$682 million. That means that the average use tax liability is less than \$340 per year even if we assume only unregistered taxpayers are responsible for all unpaid liabilities. While some taxpayers may owe large amounts, others will have paid their liability in full or may not have use tax liabilities from remote purchases. It may not be cost effective to register all of these businesses for such a low average liability.

For business to-consumer electronic commerce sales, it would be even less cost effective to pursue individual purchasers. There are over 11.5 million households in California. The average liability for electronic commerce sales would be about \$36 per household per year.

## Preparation

This revenue estimate was prepared by Joe Fitz, Research and Statistics Section. For additional information, please contact Mr. Fitz at (916) 323-3802.

Current as of June 6, 2007.

cc: Mr. Ramon J. Hirsig  
Ms. Randie L. Henry  
Ms. Margaret S. Shedd  
Mr. David E. Hayes  
Mr. Bill Benson



## 2005 Remote Sales Revenue Estimates in Formula Format

Component	Figure	Unit	Data Source and Comments, if Applicable
<b>(1) Business to Consumer</b>			
<b>Electronic Commerce</b>			
U.S. Remote Sales	\$72,057	\$ Millions	Census Bureau
CA Share of U.S. Sales	x 12%	Percent	Census Bureau
Taxable Share	x 78.0%	Percent	Census Bureau
Noncompliance Rate	x 36.0%	Percent	BOE 2004 study, updated with 2002 Economic Census data released in 2005, confirmed with independent data
Use Tax Rate	x 7.94%	Percent	BOE Data
	<b>= \$193</b>	<b>Million Dollars</b>	
<b>(2) Business to Consumer</b>			
<b>Mail Order Sales</b>			
U.S. Remote Sales	\$96,753	\$ Millions	Census Bureau
CA Share of U.S. Sales	x 10%	Percent	Census Bureau
Taxable Share	x 78.0%	Percent	Census Bureau
Noncompliance Rate	x 36.0%	Percent	BOE 2004 study, updated with 2002 Economic Census data released in 2005, confirmed with independent data
Use Tax Rate	x 7.94%	Percent	BOE Data
	<b>= \$216</b>	<b>Million Dollars</b>	
<b>(3) Business to Business</b>			
U.S. Remote Sales	\$896,510	\$ Millions	Census Bureau. Note: Judgment required to decide which survey or surveys to use. Adjusted for electronic software.
CA Share of U.S. Sales	x 12%	Percent	Census Bureau
Taxable Share	x 40.0%	Percent	Census Bureau, 2002 Economic Census. Note: Cross checked for reasonableness using outside data sources on capital goods spending and business input spending.
Noncompliance Rate	x 20.0%	Percent	Washington Dept. of Revenue Study. Note: Middle of range of compliance found in GAO report.
Use Tax Rate	x 7.94%	Percent	BOE Data
	<b>= \$683</b>	<b>Million Dollars</b>	
<b>Total, All Remote Sales</b>	<b>= \$1,092</b>	<b>Million Dollars</b>	

Notes: As discussed in the text, these revenues are spread over approximately 2 million businesses and 11.5 million households, making collection difficult. The total for all remote sales (\$1,092 million) differs from sums of the figures in text due to compounded rounding resulting from several mathematical operations.



